

## PATENT SPECIFICATION

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B3R 31 32J 37A1A 37A1D(72) Inventors: VASILY OSIPOVICH MARIN  
NIKOLAI MIKHAILOVICH SEREDA(54) A TORCH FOR GAS SHIELDED ARC  
WELDING USING A CONSUMABLE ELECTRODE

(71) We, ENGELSSKY ZAVOD  
METALLOKONSTRUKTSY, a Corpora-  
tion organised and existing under the laws of  
the Union of Soviet Socialist Republics, of  
Engels Saratovskoi oblasti, Eltonsky trakt,  
U.S.S.R., do hereby declare the invention  
for which we pray that a patent may be  
granted to us, and the method by which it is  
to be performed, to be particularly de-  
scribed in and by the following statement:-

The present invention relates to arc weld-  
ing and, in particular, to torches for gas-  
shielded arc welding using consumable elec-  
trodes.

According to the present invention there  
is provided a torch for gas-shielded arc  
welding using a consumable electrode the  
torch comprising a metal tube through  
which both an electrode wire and shielding  
gas are arranged to pass to an end portion  
thereof, a contact tube provided at the said  
end portion of the metal tube and arranged  
to allow the electrode wire to pass coaxially  
out of the tube and a nozzle in the form of a  
cup of a ceramic refractory material pro-  
vided in its bottom with a screw-threaded  
aperture in which the metal tube engages by  
an external screw thread on the tube such  
that the cup surrounds the said end portion  
of the metal tube and the contact tube, the  
metal tube having radial openings provided  
in the said end portion to allow shielding gas  
to pass out of the tube into the cup.

An arc welding torch embodying the  
invention will now be particularly described  
by way of example with reference to the  
accompanying diagrammatic drawing, the  
sole figure of which is a section through an  
arc welding torch provided with an arc  
welding torch holder.

The illustrated arc welding torch compris-  
es a hollow metal tube 1 extending from a  
holder 9 and arranged to allow both a  
consumable electrode in the form of a wire  
and a shielding gas to pass through it.

A contact tube 2 is secured in the end of  
the tube 1 remote from the holder 9 by  
means of screw threads. The contact tube 2  
is provided with a passage 3 to allow the  
electrode wire to pass coaxially out of the  
tube 1. The contact tube 2 and the adjacent  
end portion of the tube 1 are disposed  
within a nozzle in the form of a cup 4 of a  
ceramic refractory material.

The tube 1 is provided with a screw thread  
7 which engages in a threaded opening 6 in a  
thickened bottom 5 of the cup 4. The tube 1  
is provided with radial openings 8 located  
just inside the cup 4, near the bottom 5 for  
letting out the shielding gas from the tube  
into the hollow cup 4.

Thus both the shielding gas and the  
electrode wire pass through the hollow tube  
1 up to the end portion thereof, where the  
shielding gas passes directly into the cup 4  
through the openings 8 and the electrode  
wire passes through the passage 3 of the  
contact tube 2 into the cup 4.

Therefore the cup 4 acts as both a gas  
distributor and a nozzle. This combination  
of parts into a single cup 4 simplifies the  
design of the arc welding torch. Any cera-  
mic refractory material can be used for  
making the cup 4, in particular, "Borocorun-  
dum" comprising aluminium oxide, dolo-  
mite, clay and glass, or a ceramic material  
widely known as "Uralite" (Registered  
Trade Mark).

The holder 9 comprises a handle 10 in the  
form of a rubber pipe covering a metal stem  
11. The metal stem 11 is connected to a  
flexible welding cable 12, in which there is  
provided a helical duct 13 for feeding the  
electrode wire. A pipe 14 is also built into  
the stem 11 for supplying the shielding gas  
which in the present example is carbon  
dioxide. The torch is engaged in a screw  
threaded opening 15 in the front end of the  
metal stem 11.

The described arc welding torch is advan-

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tageous in that the expenditure on non-ferrous metal is greatly reduced owing to the fact that the nozzle is made of a ceramic refractory material, which significantly decreases the price of the arc welding torch. Besides, the fact that the torch nozzle is made of a refractory material practically excludes the possibility of a short circuit and therefore the torch is very reliable.

In addition the torch allows the welder to work efficiently and permits a great freedom of operation when welding complex constructions. However the torch has a simple design and is therefore low on production costs. It can be employed for welding with current of up to 600A.

**WHAT WE CLAIM IS:**

1. A torch for gas-shielded arc welding using a consumable electrode, the torch comprising a metal tube through which both an electrode wire and shielding gas are arranged to pass to an end portion thereof, a contact tube provided at the said end portion of the metal tube and arranged to allow the electrode wire to pass coaxially out of the tube, and a nozzle in the form of a cup of a ceramic refractory material provided in its bottom with a screw-threaded aperture in which the metal tube engages by an external screw thread on the tube such that the cup surrounds the said end portion of the metal tube and the contact tube, the metal tube having radial openings provided in the said end portion to allow shielding gas to pass out of the tube into the cup.

2. A torch as claimed in Claim 1, wherein the cup is made of Borcorundum.

3. A torch substantially as hereinbefore described above with reference to the accompanying drawing.

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COMPLETE SPECIFICATION

1 SHEET

This drawing is a reproduction of  
the Original on a reduced scale

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